

Mapping Contemporary Yoga and Meditation Research (2021–2025): An Indian Knowledge System Perspective Using Scientometric and Topic Modelling Techniques

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Abstract

The present study provides a comprehensive review of recent studies undertaken on yoga and meditation, assessing the publication trends, collaboration patterns, and problems associated with the topic from an Indian knowledge viewpoint. Bibliographic data were collected from the Scopus database, and a list of studies on yoga and meditation conducted between 2021–2025 was prepared, and after removing the duplicates, the total number of studies was 13,087. Microsoft Excel was used for basic analysis on year-wise rise of number of studies published, productivity of publishing authors, sources and affiliations. Additional analyses were conducted in RStudio using both simple and complex approaches like path analyses (co-authorship networks), global cooperation maps, and thematic appraisal of the study.

Most of the publications were published after 2021, which indicates huge expansion and increasing global interest in this area. In research production, a few important authors may be identified, co-authorship is moderate and international collaboration is significant, particularly between industrialized countries and especially India. The topic review states that majority of the studies focus on health-related clinical and psychological applications with an emphasis on therapeutic ways for healing. This analysis presents a broad conceptual framework for improving understanding of the fast changing research landscape and for enabling the merging of traditional knowledge with present-day science.

Keywords: Yoga; Meditation; Scientometric Analysis; Thematic Analysis; Indian Knowledge System

1. Introduction

Yoga and meditation are the two pillars of the Indian Knowledge System (IKS) and indicative of holistic route towards physical health, mental clarity and spiritual growth. The activities are based on ancient Indian traditions and are aimed at achieving a balance between body, mind and consciousness. Yoga is a series of physical postures (asanas), controlled breathing (pranayama) and meditative methods, which helps enhance strength, flexibility, focus and overall well-being. In contrast, the fundamental purpose of meditation is to improve mindfulness, self-awareness, emotional control, and mental discipline by focusing one's attention and reflecting on oneself for a long period of time (Cramer et al., 2021; Wang et al., 2021). Yoga and meditation complement and synergize disease prevention, stress management, self-development and a higher quality of life. In recent years, there has been a growing increase in research in healthcare, psychology, and neuroscience where these practices are increasingly recognised for their effectiveness in reducing stress, anxiety, depression, and lifestyle-related disorders while promoting holistic health and psychological well-being (Cramer et al., 2021; Wang et al., 2021)

In recent years there has been a tremendous increase in study in many fields like healthcare, psychology and neuroscience where these techniques are being acknowledged for their effectiveness in managing stress, anxiety and lifestyle linked diseases. Given this burgeoning cross-disciplinary literature, it is crucial to carefully analyze how research in this area is changing. Scientometric techniques offer a systematic approach for assessing publication trends, collaboration networks, and significant players, while topic modelling techniques can be employed to discover subjects within big

datasets (Jelodar et al., 2017). Combined, these approaches provide a more complete picture of the evolution and thematic preoccupations of the field.

The present study is an attempt to map the latest research on yoga and meditation in the years 2021-2025 from the perspective of Indian Knowledge System utilizing the scientometric and topic modelling methodologies. It discusses major trends, prominent contributions and emerging research issues. The study also examines co-authorship networks to determine collaborative tendencies. The distribution of publications by main documents and sources is also shown. The study also considers the connections between cited references (CR), authors (AU) and merged keywords. This integrative study allows to determine the intellectual structure and theme linkages in the field. The study provides a new view of the research environment, points out the gaps and assists in strengthening the integration of traditional Indian knowledge with modern scientific investigation.

2. Review of Literature

Bibliometric and scientometric methods have been widely used to study the research trends of yoga. For instance, Boral et al. (2025) charted the worldwide trends of yoga therapies. The research output of India for the period 1989-2018 has been analysed by Poornima and Surulinathi (2019) using the Web of Science database. However, the research are generally limited to quantitative measures and hence provide very limited insight into the publication pattern and growth. There is a lack of deeper comprehension of the issues of yoga research . This points to the necessity to explore the changing conceptual themes of yoga. Some

relevant review studies are briefly reviewed below.

Yoga and related mind-body research has been the subject of several investigations using bibliometric and analytical methodologies. Kumawat and Metri (2025) conducted a bibliometric study on research trends of yoga as stress reliever. The experiments published in the period between 2000 and 2024 in English were shown using the Scopus database. We utilized bibliometric analytic tools and VOSviewer for the visualization of publications, authors and research trends. In a bibliometric research of mind-body therapy, Zhang et al. (2025) found 29,710 publications. According to the data, highest articles were produced by China, the UK and the USA.

The study also showed common keywords that occurred such as acupuncture, quality of life, depression and pain. Baminiwatta and Solangaarachchi (2021) applied bibliometric methods to examine the historical developments, active research areas, and emerging trends in mindfulness. The study reviewed 16,581 publications from 1966 to 2021 and revealed a substantial exponential increase in research output, especially after 2006, with leading journals, authors, organisations, and countries contributing to the field. From a different methodological perspective, Kee et al. (2019) used a probabilistic topic modelling approach in a scoping review to identify prominent themes in mindfulness research. Earlier Gupta et al. (2018) have studied 3,966 global publications on yoga research indexed in Scopus during 2007-2016. They observed that the research output grew by 7.79 percent and the average citation effect was 10.44 citations per piece. The United States contributed the most (38.35%) followed by India (19.29%), United Kingdom (6.61%) and Canada (5.09%).

These studies offer an important insights on publishing trends and research output but are largely quantitative in nature. There is a noticeable research gap in the depth of thematic evaluation to delineate the conceptual structure and evolving research themes in the field of yoga studies, emphasizing the importance for more integrated and comprehensive analytical approaches.

The importance of this study is to provide a comprehensive understanding of new research directions, collaborative models and thematic development in yoga and meditation studies from the Indian Knowledge System (IKS) perspective, which will help for future research and integration of traditional knowledge with modern scientific approaches.

3. Objectives

- To study the year-wise growth of publications and to predict the future research output using predictive modeling approaches.
- To determine the most prolific authors, sources and affiliations in the research domain.
- To study co-authorship structures and global collaboration trends of scholars and countries.
- To investigate the thematic trends and evolution of the research area.
- To explore the intellectual structure of the field by assessing the links between cited references, authors and keywords.

4. Scope & Limitations

This research aims to understand the sort of research conducted throughout the years 2021-2025. The research was limited to the topic of yoga and only one database (Scopus) was used to collect information. There are limitations: there are other databases which provide

information on yoga research (e.g. Web of Science and PubMed) but these will not be included in this study. Additionally, the years 2021-2025 were chosen because they reflect more current developments in yoga study; yet, they do not provide much historical context for yoga research. All findings of this study should be interpreted with these limitations in mind.

5. Research Methodology

This study follows a quantitative approach to understand recent research trends in yoga and related mind–body practices. The data were collected from the *Scopus* database on 25 March 2026. To retrieve relevant documents. A structured search strategy was applied using the following query:

TITLE-ABS-KEY (yoga OR “yoga therapy” OR “yogic practice” OR pranayama OR “meditation” OR “mindfulness meditation” OR “transcendental meditation” OR “vipassana” OR “dhyana” OR “raj yoga” OR “kundalini

yoga”)

AND PUBYEAR > 2020 AND PUBYEAR < 2026

Records identified as duplicates were removed from the database. Further data refining was carried by using Microsoft Excel. The total data collection had 13,087 documents for examination. The analysis was performed using both basic and advanced methodologies. Growth by publication year and authors with high volumes of publications were used to analyse general trends of different regions. For subsequent phases of the analysis, more sophisticated analyses such as co-author mapping, most frequently used keywords (i.e., top phrases), and theme analyses were conducted using RStudio. The combination of analysis methodologies provides a comprehensive overview of the research activities, networking between academics and development of new research issues in the field of yoga.

6. Data Analysis and Interpretation

Table 1 Main Information about the data

Description	Results
Timespan	2021–2025
Sources	4,988
Documents	13,087
Annual Growth Rate (%)	33.56
Document Average Age	2.86
Average Citations per Document	6.9
Author’s Keywords	30,718
Keywords Plus (ID)	27,906

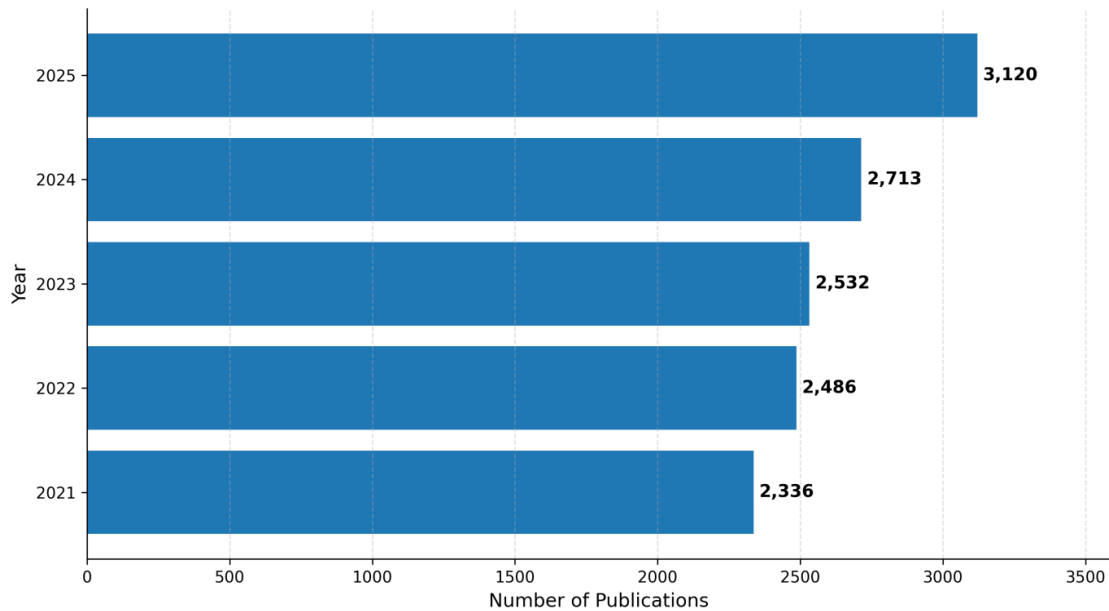


Figure 1 Year-wise Publication Growth Trend in Yoga Research (2021–2025)

Table 1 summarises the main attributes of the dataset for the period 2021–2025. The 13087 documents published in 4988 sources show a broad and diverse research base. The yearly growth rate of 33.56% shows a consistent increase in the scholarly output that indicates increasing scholarly interests in the field. The average age of the documents is 2.86 years, so the research field seems to be somewhat new and in development. The dataset has a moderate influence on research with an average of 6.9 citations per document. Also, there is a large number of Author’s Keywords (30,718) and Keywords Plus (27,906), which is indicative of a significant thematic diversity. Overall, the

results imply that the field of study is a dynamic one with a growth and an increasing scholarly attention.

The number of papers related to yoga research increased year by year, from 2021 to 2025 (Figure 1). The figures indicate a steady rise from 2,336 articles in 2021 to 3,120 in 2025, which shows growing scientific interest in this topic. Between 2022 and 2023 there is a slight increase, then after 2023 the increase is more significant. The increased trend shows that yoga and its applications in health, psychology and wellness studies are getting more academic attention and research effort.

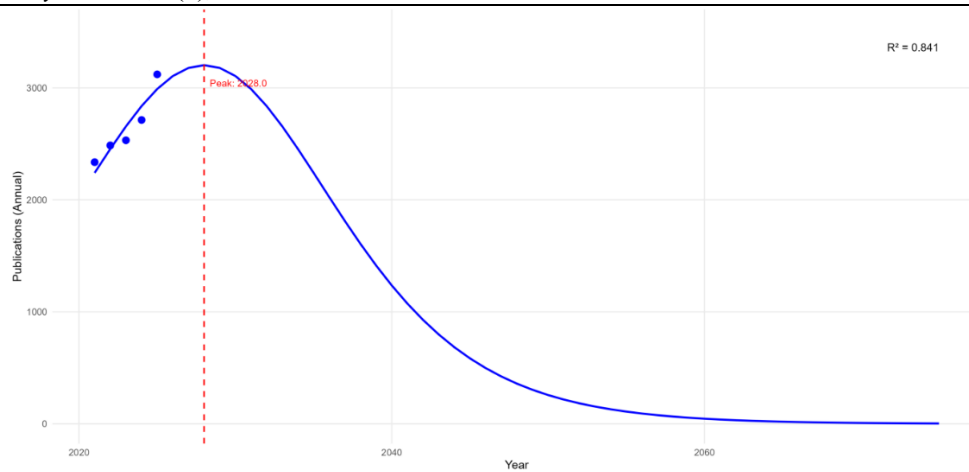


Figure 2 Life Cycle of Annual Publications

Table 2 Top Authors, Sources and Affiliations

Sl No.	Top Authors (Publications)	No. of Pubs	Top Sources (Documents)	No. of Docs	Top Affiliations (Output)	No. Of Output
1	Li Y	81	Mindfulness	298	Harvard Medical School, USA	33
2	Wang Y	66	Frontiers In Psychology	245	Lt. Col. Luke Weathers Jr. Va Medical Center, USA	29
3	Zhang Y	64	Int. J. Environmental Research & Public Health	182	School Of Public Health, University Of Memphis, USA	29
4	Li J	52	Religions	160	Clinical Cardiac Electrophysiology Lab, USA	29
5	Liu Y	49	Frontiers In Psychiatry	103	American Academy For Yoga In Medicine, USA	29
6	Liu C	48	J. Of Ayurveda & Integrative Medicine	91	Cardiovascular Research & Innovations, USA	29
7	Singh A	47	Int. J. Of Yoga Therapy	86	Cardio-Pulmonary Resuscitation Committee, USA	29
8	Chen H	44	J. Of Integrative & Complementary Medicine	84	Arizona State University, USA	20
9	Li X	44	Healthcare (Switzerland)	74	Sapienza University Of Rome, Italy	19
10	Chen Y	44	Complementary Therapies In Clinical Practice	69	Massachusetts General Hospital / Harvard Medical School	17

The trend of annual publications in the studied subject throughout its life-cycle is shown in Figure 2. The blue curve is the fitted life cycle growth model and the blue dots are the actual counts of publications. The vertical red dashed line indicates the peak year (around 2028) with an expected maximum of about 3280 publications. After this peak the curve shows a gradual decrease in publications. The R^2 value of 0.841 indicates good model fit and the field is approaching maturity and then a possible decline phase.

The most productive authors, sources, and affiliations contributing to yoga research are shown in Table 2, providing a comprehensive overview of the intellectual and institutional landscape of the field. The authorship pattern shows that a few researchers make a significant contribution to the domain. The most prolific authors Li Y, Wang Y and Zhang Y are said to be the most prolific contributors which indicate towards a high concentration of research productivity. The dominance of these authors indicates a central group of authors who are actively influencing the evolution of yoga-related studies. In addition, the prevalence of Asian surnames indicates the increasing importance of countries such as China and India.

The main outlets include journals such as the International Journal of Environmental Research and Public Health, Frontiers in Psychology and Mindfulness. This demonstrates how yoga research is multi-disciplinary involving integrative medicine, public health and psychology. Specialised journals such as Journal of Ayurveda and Integrative Medicine and International Journal of Yoga Therapy further strengthen the integration of traditional knowledge systems with modern scientific study.

The results of affiliation analysis indicated that most of the research came from American institutions, while Harvard Medical School and allied research centers published the most research articles. This means that yoga, albeit of Indian origin, has the bulk of high-impact research happening in Western universities and medical institutes. It also demonstrates the increasing acceptability of yoga as a topic of scientific and therapeutic research throughout the world.

In summary, Table 2 reveals a significant interdisciplinary and worldwide research interest and a clustering of academic activity around major authors, journals and institutions. This pattern underscores the collaborative nature of knowledge production in this field as well as the increasing global relevance of yoga research.

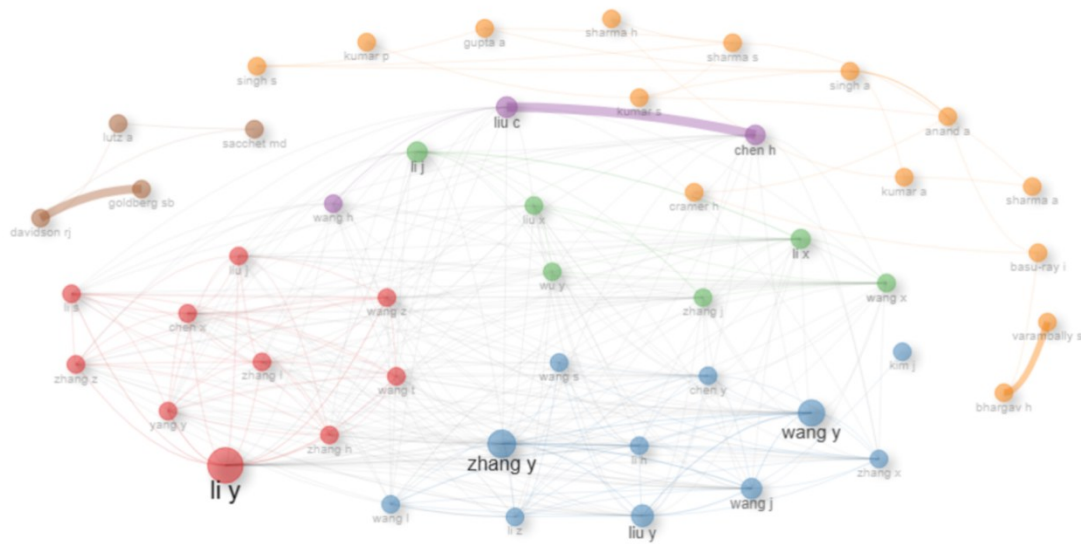


Figure 3 Co-authorship Network of Authors

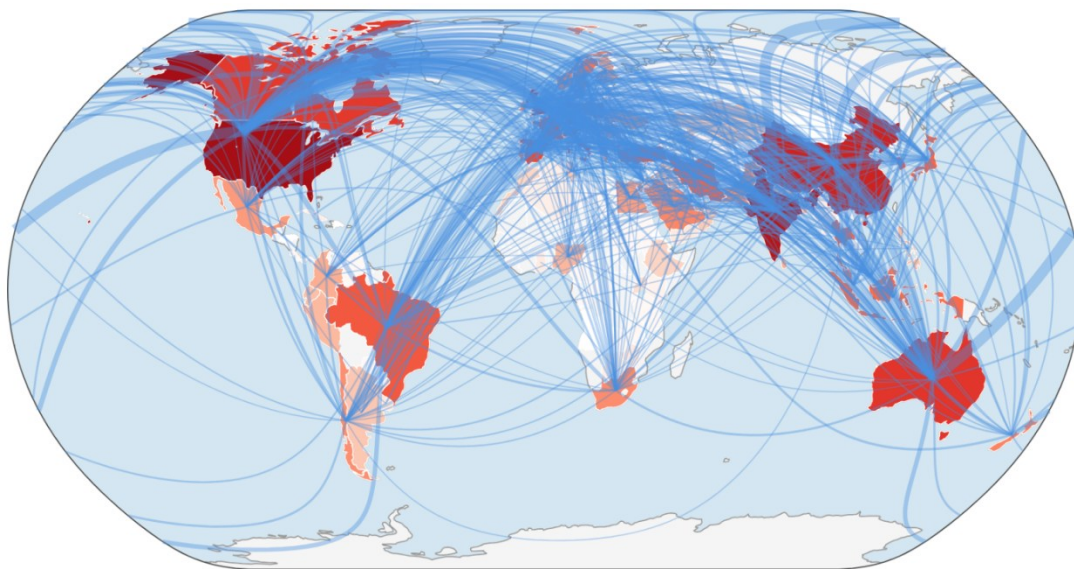


Figure 4 Global Collaboration Network Map

The co-authorship network in this figure shows how authors in the field of yoga and meditation studies work collaboratively. The larger the node's size (e.g., Li Y, Zhang Y, Wang Y), the more significant or productive the contributors are. Different colours represent different research clusters or collaborative groups and the

links between nodes indicate co-authorship affiliations. The network shows several distinct clusters, suggesting that research is performed within specific cooperative organisations rather than in a fully interconnected global network. Prominent authors are key in the knowledge production, being focal nodes in clusters.

Overall, the figure reflects a moderate level of cooperation with dispersed research communities, showing potential for more robust multidisciplinary and global cooperation in this field.

The global collaboration network is depicted in Figure 4. America and Europe (the very dense connecting lines demonstrate that both regions have collaboration and well-established research networks. On the other hand, other regions (mainly Africa and parts of South America) have fewer connecting lines, reflecting the low participation in international collaborative academic research. So the map also shows how much globalisation of academic research there has been, and how much knowledge-sharing has taken place across national borders. In addition,

it reveals that a small number of major nations perform the majority of research activity, but also indicates that significantly increased effort is required to engage under-represented regions and nations on future international academic research cooperative opportunities.

India also enjoys a special place in this network as the birthplace and source of yoga. The map shows that India is not only a major contributor to research output but also collaborating with other major research hubs around the world such as the United States, Europe and Asia. This highlights India's dual role as a cultural pioneer and an emerging scientific contributor in the global dissemination and development of yoga research.

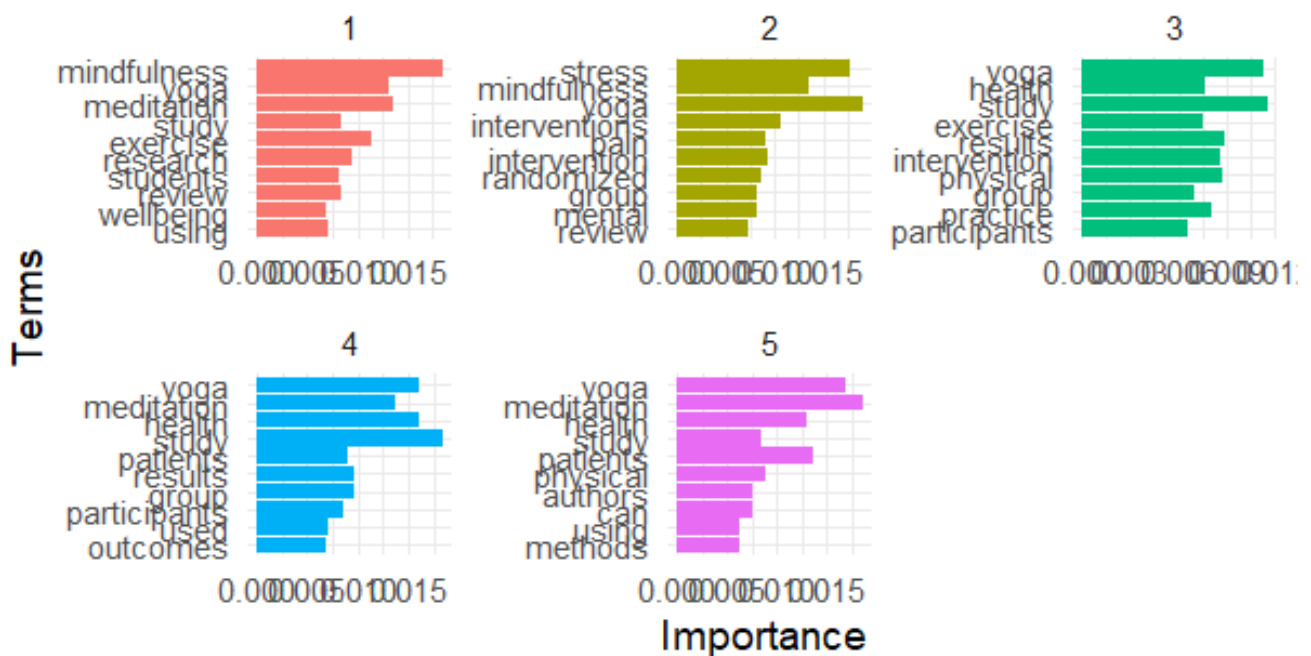


Figure 5 Top Terms per Topic (LDA)

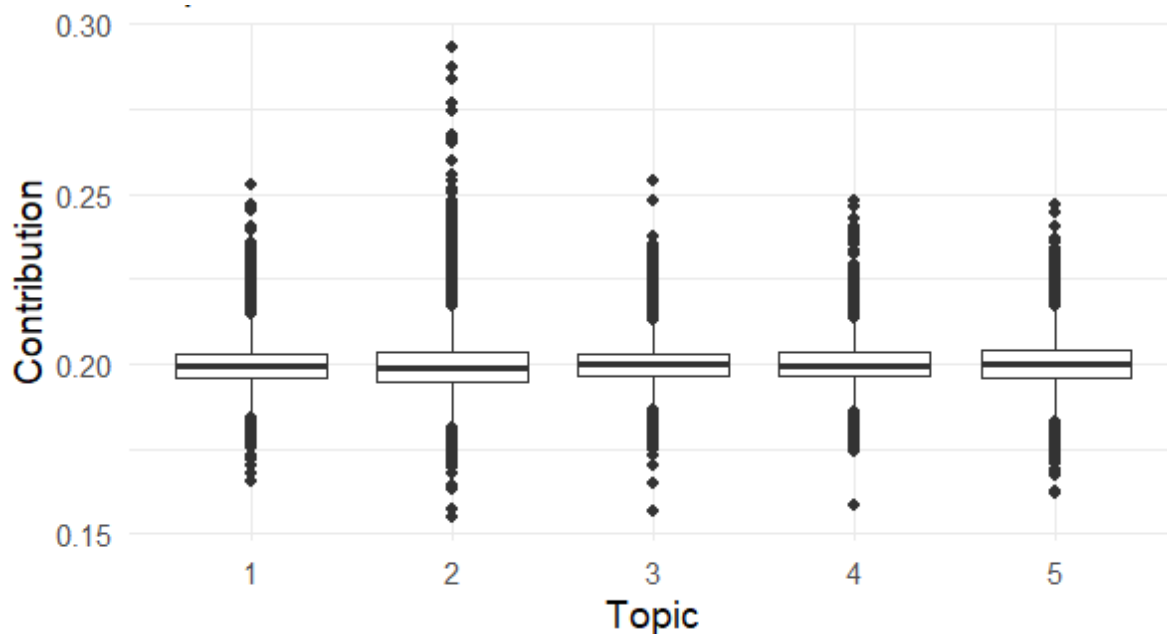


Figure 6 Top Distribution across Documents

The five LDA topics and their top associated terms are illustrated in Figure 5. Each field of study is emphasised by one of the disciplines. Topic 1 = Mindfulness and mental health; Topic 2 is about clinical therapies; Topic 3 is about physical features of yoga; Topic 4 is about medical and therapeutic outcomes and Topic 5 is about general research methodologies. Overall, the findings suggest that contemporary yoga and meditation research, which is largely focused on health, psychological and clinical applications, pays less attention to the traditional philosophical underpinnings.

Figure 6. Top phrases for each of the five subjects generated by Latent Dirichlet Allocation (LDA) in yoga and meditation research. Each panel represents a topic and the bars indicate the relevance (beta values) of the

most significant phrases. In Topic 1 we will discuss words like mindfulness, meditation and well-being. This indicates an emphasis on stress management and mental wellness. Topic 2 involves clinical and experimental research and covers stress, therapies and randomisation. Topic 3 deals with physical health and practice-based research, with a focus on yoga, exercise and physical fitness. Topic 4 concerns health patients and results and has therapeutic and medicinal applications. In Topic 5, yoga, meditation and techniques are employed to shed light on wide research topics. In general, the picture suggests that the old Indian philosophical principles are hardly taken into account in the contemporary study which is mostly concentrated on physiological, therapeutic and psychological elements.

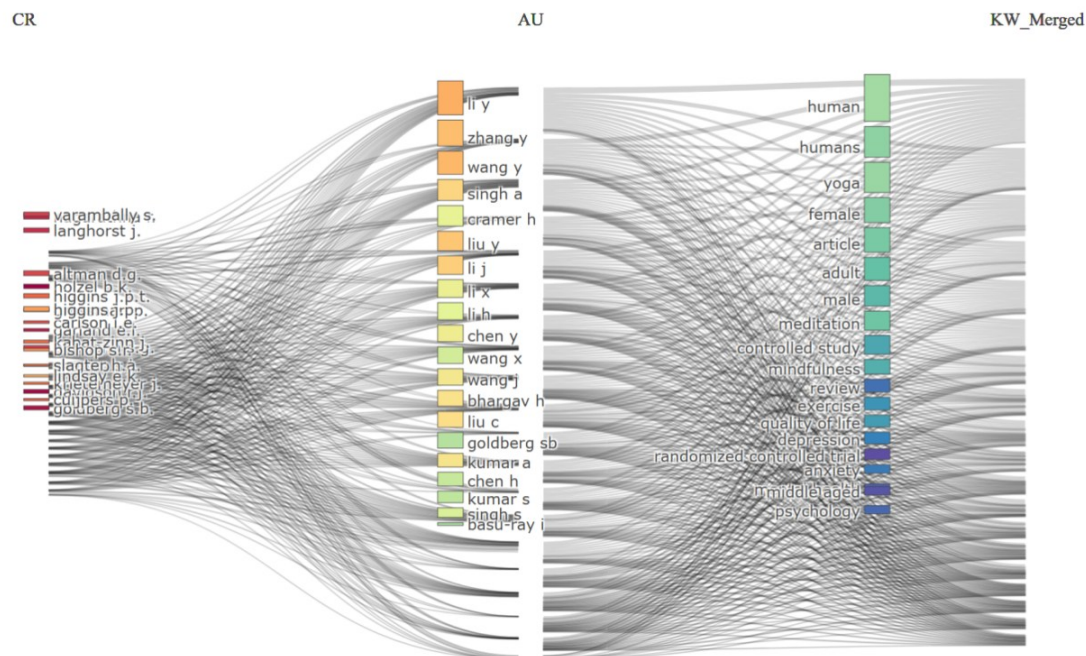


Figure 7 Three-field plot showing relationships among Cited References (CR), Authors (AU), and Merged Keywords (KW_Merged)

The three-field (Sankey) plot of Figure 7 illustrates the relationship between cited references, authors and research keywords. The most productive authors are shown in the middle column, the most commonly cited authors are shown on the left, and common research keywords are shown on the right side. The flow

lines indicate how the authors are related to references and topics, such as human studies, yoga, meditation, depression, and anxiety. The intensity of the colour shows contribution or frequency. This emphasises the major contributors and the dominant research issues in the subject.

7. Major Findings

The current study explores a range of scientific works dedicated to yoga and meditation within the 5-year period from 2021 to 2025. Research in the subject has grown substantially with scholarly works increasing at an average yearly growth rate of 33.56%, indicating the growing interest in yoga and its applications. At the same time, one can see that the science of yoga and meditation study is gradually maturing and the maximal number of works can be expected in 2028.

From the production perspective, it is clear that most of the research effort is done by a few writers and sources, Li Y, Wang Y and Zhang Y are the most significant ones. The most important journals for the publication of papers in this field are *Frontiers in Psychology* and *Mindfulness*.

In terms of collaboration there are some co-authorship patterns but the clusters of study are somewhat isolated, not a fully unified worldwide network. Much of the international collaboration involves industrialized countries, with the United States and Europe being the most engaged. Relatively low participation from Africa and parts of South America. Not just as the birthplace of yoga, India has also grown up as a prominent actor in worldwide research collaboration as one of the contributors to the scientific growth of yoga across the world.

Thematic analysis reveals that the present studies on yoga predominantly target clinical, psychological and health-related applications, with relatively low focus on philosophical and traditional components. Moreover, the Intellectual Structure Analysis (given references, authors and keywords) shows the significant interconnectedness among them, reflecting an already built and growing body of knowledge in yoga.

8. Conclusion

The present study intended to provide an integrated scientometric and descriptive overview of the existing literature on yoga and meditation. To this end, a range of quantitative approaches were employed, including analysis of publication trends, network analysis, mapping collaboration and data visualisation, supported by a thematic review of the literature to identify key research directions and emerging developments. The results show a substantial increase in the global academic output in recent years, which shows a growing recognition of yoga and meditation as relevant subjects for multidisciplinary research.

The results also reveal that yoga and meditation which are part of Indian Knowledge System (IKS) are not just confined to their traditional and spiritual settings but are also relevant in the fields of health care, psychology, neuroscience and wellness related disciplines. Research trends indicate a considerable focus on therapeutic, clinical and psychological outcomes notably in relation to stress, mental well-being and lifestyle-related difficulties. The rise in international collaboration and publication networks is also a sign of the global adoption of these activities.

The study, however, concludes that more comprehensive and fair research is needed. To advance scientific study, more representation from underrepresented regions and a stronger focus on the philosophical, cultural and traditional roots of yoga and meditation are needed, while respecting the original context of these practices. Future transdisciplinary study should be devoted to classical knowledge and modern applications. The study provides a basis for future evidence-based research and policy

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creation, a better understanding of the dynamic research landscape, and a baseline to merge the ancient wisdom with current scientific discoveries.

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Declaration of Conflicting Interests

The author/s declare/s no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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